Notice No.8

Rules and Regulations for the Classification of Ships, July 2019

The status of this Rule set is amended as shown and is now to be read in conjunction with this and prior Notices. Any corrigenda included in the Notice are effective immediately.

Please note that corrigenda amends to paragraphs, Tables and Figures are not shown in their entirety.

Issue date: June 2020

Amendments to	**Effective date**	**IACS/IMO implementation (if applicable)**
Part 5, Chapter 10, Sections 1–6 & 8–11	1 July 2020	NA
Part 5, Chapter 11, Sections 1–4, 6, 7 & 10	1 July 2020	NA
Part 5, Chapter 12, Section 8	1 July 2020	NA
Part 5, Chapter 19, Section 4	1 July 2020	1 July 2020
Part 6, Chapter 2, Section 1	1 July 2020	NA
Part 7, Chapter 8, Section 1	1 July 2020	NA
Part 7, Chapter 11, Sections 1-3	1 July 2020	NA

Part 5, Chapter 10
Steam Raising Plant and Associated Pressure Vessels

■ *Section 1*
General requirements

1.2 Definition of symbols

(Part only shown)
1.2.1 The symbols used in the various formulae in *Pt 5, Ch 10, 2 Cylindrical shells and drums subject to internal pressure* to *Pt 5, Ch 10, 8 Headers*, unless otherwise stated, are defined as follows and are applicable to the specific part of the pressure vessel under consideration:
T = design temperature, in °C
c = corrosion allowance in mm for design and operating condition taking into account the intended life cycle; a minimum corrosion allowance of 0,75 mm is to be used, any deviation is to be agreed with LR taking into consideration the material type, service fluid, design and operating conditions. The corrosion allowance is to be added to the calculated Rule thickness as well as to the minimum thickness specified by the Rules.

1.2.2 Where reference is made to calculated or actual plate thickness for the derivation of other values, these thicknesses are to be minus the ~~standard Rule~~ corrosion allowance ~~of 0,75 mm, if not so stated~~ (*c*).

■ *Section 2*
Cylindrical shells and drums subject to internal pressure

2.1 Minimum thickness

(Part only shown)
2.1.1 Minimum thickness, *t*, of a cylindrical shell is to be determined by the following formula:

$$\cancel{t = \frac{pRi}{\sigma J - 0{,}5p} + 0{,}75\ \mathrm{mm}}$$

$$\boxed{t = \frac{pR_i}{\sigma J - 0{,}5p} + c}$$

where
= *t, p, R*ᵢ, *c* and σ are defined in *Pt 5, Ch 10, 1.2 Definition of symbols*,

■ *Section 3*
Spherical shells subject to internal pressure

3.1 Minimum thickness

3.1.1 The minimum thickness of a spherical shell is to be determined by the following formula:

$$\cancel{t = \frac{pRi}{2\,\sigma J - 0{,}5p} + 0{,}75\ \mathrm{mm}}$$

$$\boxed{t = \frac{pR_i}{2\,\sigma J - 0{,}5p} + c}$$

where *t*, *p*, R_i, c, σ and *J* are as defined in *Pt 5, Ch 10, 1.2 Definition of symbols.*

■ *Section 4*
Dished ends subject to internal pressure

4.1 Minimum thickness

(Part only shown)
4.1.1 The thickness, *t*, of semi-ellipsoidal and hemispherical unstayed ends, and the knuckle section of torispherical ends, dished from plate, having pressure on the concave side and satisfying the conditions listed below, is to be determined by the following formula:

$$\cancel{t = \frac{p\,Do\,K}{2\,\sigma J} + 0{,}75\text{ mm}}$$

$$\boxed{t = \frac{pD_oK}{2\,\sigma J} + c}$$

where
= *t*, *p*, D_o, *c*, σ and *J* are as defined in *Pt 5, Ch 10, 1.2 Definition of symbols*

4.1.4 In addition to the formula in *Pt 5, Ch 10, 4.1 Minimum thickness 4.1.1* the thickness, *t*, of a torispherical head, made from more than one plate, in the crown section is to be not less than that determined by the following formula:

$$\cancel{t = \frac{pRi}{2\,\sigma\,J - 0{,}5p} + 0{,}75\text{ mm}}$$

$$\boxed{t = \frac{pR_i}{2\,\sigma J - 0{,}5p} + c}$$

where
= *t*, *p*, R_i, *c*, σ and *J* are as defined in *Pt 5, Ch 10, 1.2 Definition of symbols*.

■ *Section 5*
Conical ends subject to internal pressure

5.2 Minimum thickness

(Part only shown)
5.2.1 The minimum thickness, *t*, of cylinder, knuckle and conical section at the junction and within the distance, *L*, from the junction is to be determined by the following formula:

$$\cancel{t = \frac{p\,Do\,K}{2\,\sigma J} + 0{,}75\text{ mm}}$$

$$\boxed{t = \frac{pD_oK}{2\,\sigma J} + c}$$

where
= *t*, *p*, σ, *c* and *J* are as defined in *Pt 5, Ch 10, 1.2 Definition of symbols*,

5.2.3 The minimum thickness, *t*, of those parts of conical sections not less than a distance, *L*, from the junction with a cylinder or other conical section is to be determined by the following formula:

$$\cancel{t = \frac{pD_c}{(2\sigma J - p)}\,\frac{1}{\cos\alpha} + 0{,}75\text{ mm}}$$

$$\boxed{t = \frac{pD_c}{2\sigma J - p}\,\frac{1}{\cos\alpha} + c}$$

where
α, α_1, α_2 = angle of slope of conical section (at the point under consideration) to the vessel axis, *see Figure 10.5.1 Conical ends and conical reducing sections*~~.~~
c is as defined in *Pt 5, Ch 10, 1.2 Definition of symbols.*

■ *Section 6*

Standpipes and branches

6.1 Minimum thickness

(Part only shown)

6.1.1 The minimum wall thickness of standpipes and branches is to be not less than that determined by *Pt 5, Ch 10, 7.1 Minimum thickness* increased by the addition of a corrosion allowance ~~of 0,75 mm~~ (*c* as defined in *Pt 5, Ch 10, 1.2 Definition of symbols 1.2.1*), making such additions as may be necessary on account of bending, static loads and vibration. The wall thickness, however, is to be not less than:

$t = 0{,}015D_o + 3{,}2$ mm

■ *Section 8*

Headers

8.2 Rectangular section headers

(Part only shown)

8.2.1 The thickness of the flat walls of rectangular section headers is to be determined at the centre of the sides, at all the lines of holes and at the corners. The minimum required is to be the greatest thickness determined by the following formula:

$$\cancel{t = \frac{pn}{2\sigma J} + \sqrt{\frac{0{,}4\,Yp}{\sigma\,J1}} + 0{,}75\ \text{mm}}$$

$$t = \frac{pn}{2\sigma J} + \sqrt{\frac{4\,Yp}{\sigma\,J_1}} + c$$

where

Y = a coefficient determined in accordance with *Pt 5, Ch 10, 8.2 Rectangular section headers 8.2.2*. In all cases if the value of *Y* is negative, the sign is to be ignored~~.~~

c is defined in *Pt 5, Ch 10, 1.2 Definition of symbols*

8.3 Toroidal furnace headers

(Part only shown)

8.3.1 The minimum thickness of a toroidal header forming the lower end of a waterwall furnace, and supporting the weight of the boiler and water, is to be determined by the following formula:

$$\cancel{t = A + \sqrt{A2 + \frac{4M}{J\,S\,\sigma}} + 0{,}75\ \text{mm}}$$

$$t = A + \sqrt{A^2 + \frac{4M}{JS\sigma}} + c$$

where

$A = \frac{pr}{3J\sigma}$ mm

= *t, p, c* and σ are as defined in *Pt 5, Ch 10, 1.2 Definition of symbols*

J = ligament efficiency of tube holes around toroid

$= \dfrac{S - d_e}{S}$

S = pitch of tubes around the toroid, in mm

$$\cancel{M = \frac{Wr}{3} - \frac{pd2r}{4}\ \text{Nmm}}$$

$M = \frac{Wr}{3} - \frac{p\,d^2r}{4}$ Nmm

8.4 Header ends

(Part only shown)

8.4.3 Ends attached by welding are to be designed as follows:

- Dished ends: these are to be in accordance with *Pt 5, Ch 10, 4.1 Minimum thickness*.
- Flat ends: the minimum thickness of flat end plates is to be determined by the following formula:

$$\cancel{t = di\sqrt{\frac{10p\,C}{\sigma}} + 0{,}75\ mm}$$

$$t = d_i\sqrt{\frac{10p\,C}{\sigma}} + c$$

= where *p, c* and σ are as defined in *Pt 5, Ch 10, 1.2 Definition of symbols*.

■ *Section 9*
Flat surfaces and flat tube plates

9.1 Stayed flat surfaces

(Part only shown)
9.1.6 The thickness, *t*, of those portions of flat plates supported by stays and around tube nests is to be determined by the following formula:

~~$t = Cd\sqrt{\frac{10p}{\sigma}} + 0{,}75\ mm$~~

$$t = \ Cd\sqrt{\frac{10\,p}{\sigma}} + c$$

= where *t*, *p*, *c* and σ are as defined in *Pt 5, Ch 10, 1.2 Definition of symbols*

9.4 Flat plate margins

(Part only shown)
9.4.1 The width of margin, *b*, of a flat plate which may be regarded as being supported by the shell, furnaces or flues to which the flat plate is attached is not to exceed that determined by the following formula:

~~$B = C(t - 0{,}75)\sqrt{\frac{\sigma}{10p}}$ mm~~

$$b = C(t - c)\sqrt{\frac{\sigma}{10p}} \quad mm$$

= where *p, c* and σ are as defined in *Pt 5, Ch 10, 1.2 Definition of symbols*

■ *Section 10*
Flat plates and ends of vertical boilers

10.1 Tube plates of vertical boilers

(Part only shown)
10.1.1 Where vertical boilers have a nest or nests of horizontal tubes, so that there is direct tension on the tube plates due to the vertical load on the boiler ends or to their acting as horizontal ties across the shell, the thickness of the tube plates in way of the outer rows of tubes is to be determined by the following formula:

~~$t = \frac{20pD}{JR_{20}} + 0{,}75$ mm~~

$$t = \frac{20pD}{JR_{20}} \ + c$$

= where *t, c* and *p* are as defined in *Pt 5, Ch 10, 1.2 Definition of symbols*

10.3 Dished and flanged ends for vertical boilers

(Part only shown)
10.3.1 The minimum thickness, *t*, of dished and flanged ends for vertical boilers which are subject to pressure on the concave side and are supported by central uptakes is to be determined by the following formula:

~~$t = \frac{100\,p\,Ri}{13\,\sigma} + 0{,}75$ mm~~

$$t = \frac{100pR_i}{13\sigma} + c$$

where

= *t*, *p*, c, R_i and σ are as defined in *Pt 5, Ch 10, 1.2 Definition of symbols*.

■ Section 11
Furnaces subject to external pressure

11.2 Corrugated furnaces

11.2.1 The minimum thickness, *t*, of corrugated furnaces is to be determined by the following formula:

~~$t = \frac{10p\,Do}{C} + 0{,}75$ mm~~

$$t = \frac{10pD_o}{C} + c$$

= where *p*~~,~~ and *c* ~~is~~ are as defined in *Pt 5, Ch 10, 1.2 Definition of symbols*

11.3 Plain furnaces, flue sections and combustion chamber bottoms

(Part only shown)

11.3.1 The minimum thickness, *t*, between points of substantial support, of plain furnaces or furnaces strengthened by stiffening rings, of flue sections and of the cylindrical bottoms of combustion chambers is to be determined by the following formulae the greater of the two thicknesses obtained being taken:

~~$t = \sqrt{\frac{p\,Do(L+610)}{102\,40}} + 0{,}75$ mm~~

$$t = \sqrt{\frac{p\,D_o(L\,+\,610)}{102\,40}} + c$$

~~$t = \frac{C\,p\,Do}{110} + \frac{L}{320} + 0{,}75$ mm~~

$$t = \frac{CpD_o}{110} + \frac{L}{320} + c$$

= where *t*, *c* and *p* are as defined in *Pt 5, Ch 10, 1.2 Definition of symbols*

11.5 Hemispherical furnaces

(Part only shown)

11.5.1 The minimum thickness, *t*, of unsupported hemispherical furnaces subject to pressure on the convex surface is to be determined by the following formula:

~~$t = \frac{C\,p\,Ro}{60{,}8} + 0{,}75$ mm~~

$$t = \frac{CpR_o}{60{,}8} + c$$

= where *t*, *c* and *p* are as defined in *Pt 5, Ch 10, 1.2 Definition of symbols*

11.5.2 In no case is the maximum thickness to exceed 22,5 mm or the ratio ~~$\frac{Ro}{t - 0{,}75}$~~

$$\frac{R_o}{t - c}$$

to exceed 100.

11.6 Dished and flanged ends for supported vertical boiler furnaces

(Part only shown)

11.6.1 The minimum thickness, *t*, of dished and flanged ends for vertical boiler furnaces that are subject to pressure on the convex side and are supported by central uptakes, is to be determined by the following formula:

~~$t = \frac{p\,Ro}{\sigma} + 0{,}75$ mm~~

$$t = \frac{pR_o}{\sigma} + c$$

where *t*, *p*, *R*~~$_o$~~$_o$, *c* and σ are as defined in *Pt 5, Ch 10, 1.2 Definition of symbols*.

11.7 Dished and flanged ends for unsupported vertical boiler furnaces

(Part only shown)
11.7.1 The minimum thickness, *t*, of dished and flanged ends for vertical boiler furnaces that are subject to pressure on the convex side and are without support from stays of any kind, is to be determined by the following formula, but is in no case to be less than the thickness of the firebox:

$$\cancel{t = \frac{C\,p\,Ro}{66} + 0{,}75\ \text{mm}}$$

$$\boxed{t = \frac{CpR_o}{66} + c}$$

where *t*, *c* and *p* are as defined in *Pt 5, Ch 10, 1.2 Definition of symbols*.

11.8 Ogee rings

(Part only shown)
11.8.1 The minimum thickness, *t*, of the ogee ring which connects the bottom of the furnace to the shell of a vertical boiler and sustains the whole vertical load on the furnace is to be determined by the following formula:

$$\cancel{t = \sqrt{\frac{p\,Di(Di - Do)}{990}} + 0{,}75\ \text{mm}}$$

$$\boxed{t = \sqrt{\frac{pD_i(D_i - D_o)}{990}} + c}$$

= where *t*, *c* and *p* are as defined in *Pt 5, Ch 10, 1.2 Definition of symbols*

Part 5, Chapter 11
Other Pressure Vessels

■ *Section 1*
General requirements

1.2 Definition of symbols

(Part only shown)
1.2.1 The symbols used in the various formulae in *Pt 5, Ch 11, 2 Cylindrical shells and drums subject to internal pressure* to *Pt 5, Ch 11, 7 Standpipes and branches* inclusive, unless otherwise stated, are defined as follows, and are applicable to the specific part of the pressure vessel under consideration:

T = design temperature, in °C

c = corrosion allowance in mm for sign and operating condition taking into account the intended life cycle; a minimum corrosion allowance of 0,75 mm is to be used, any deviation is to be agreed with LR taking into consideration the material type, service fluid, design and operating conditions. The corrosion allowance is to be added to the calculated Rule thickness as well as to the minimum thickness specified by the Rules.

1.2.2 Where reference is made to calculated or actual plate thickness for the derivation of other values, these thicknesses are to be minus the ~~standard Rule~~ corrosion allowance ~~of 0,75 mm, if not so stated~~ (*c*).

■ *Section 2*
Cylindrical shells and drums subject to internal pressure

2.1 Minimum thickness

(Part only shown)
2.1.1 The minimum thickness, *t*, of a cylindrical shell is to be determined by the following formula:

$$\cancel{t = \frac{pRi}{\sigma\ J - 0{,}5p} + 0{,}75\ \text{mm}}$$

$$\boxed{t = \frac{pR_i}{\sigma\,J - 0{,}5p} + c}$$

where
t, *p*, R_i, *c* = and σ are as defined in *Pt 5, Ch 11, 1.2 Definition of symbols*

■ *Section 3*

Spherical shells subject to internal pressure

3.1 Minimum thickness

3.1.1 The minimum thickness, *t*, of a spherical shell is to be determined by the following formula:

$$\cancel{t = \frac{pRi}{2\,\sigma\;J - 0{,}5\text{p}} + 0{,}75\ \text{mm}}$$

$$\boxed{t = \frac{pR_i}{2\sigma J - 0{,}5p} + c}$$

where

= *t*, *p*, *R*~~-~~$_i$, σ, *c* and *J* are as defined in *Pt 5, Ch 11, 1.2 Definition of symbols*.

■ *Section 4*

Dished ends subject to internal pressure

4.1 Minimum thickness

(Part only shown)

4.1.1 The thickness, *t*, of semi-ellipsoidal and hemispherical unstayed ends, and the knuckle section of torispherical ends, dished from plate, having pressure on the concave side and satisfying the conditions listed below, is to be determined by the following formula:

$$\cancel{t = \frac{p\;Do\;K}{2\;\sigma\;J} + 0{,}75\ \text{mm}}$$

$$\boxed{t = \frac{pD_oK}{2\sigma J} + c}$$

where

= *t*, *p*, *D*~~-~~$_o$, *c* and *J* are as defined in *Pt 5, Ch 11, 1.2 Definition of symbols*

4.1.4 In addition to the formula in *Pt 5, Ch 11, 4.1 Minimum thickness 4.1.1* the thickness, *t*, of a torispherical head, made from more than one plate, in the crown section, is to be not less than that determined by the following formula:

$$\cancel{t = \frac{pRi}{2\,\sigma\;J - 0{,}5\text{p}} + 0{,}75\ \text{mm}}$$

$$\boxed{t = \frac{pR_i}{2\;\sigma\;J - 0{,}5p} + c}$$

= where *t*, *p*, *R*~~-~~$_i$, σ, *c* and *J* are as defined in *Pt 5, Ch 11, 1.2 Definition of symbols*.

■ *Section 6*

Conical ends subject to internal pressure

6.2 Minimum thickness

(Part only shown)

6.2.1 The minimum thickness, *t*, of the cylinder, knuckle and conical section at the junction and within the distance *L* from the junction is to be determined by the following formula:

$$\cancel{t = \frac{p\;Do\;K}{2\;\sigma\;J} + 0{,}75\ \text{mm}}$$

$$\boxed{t = \frac{p\;D_oK}{2\;\sigma\;J} + c}$$

where

= *t*, *p*, σ, *c* and *J* are as defined in *Pt 5, Ch 11, 1.2 Definition of symbols*.

(Part only shown)

6.2.3 The minimum thickness, *t*, of those parts of conical sections not less than a distance *L* from the junction with a cylinder or other conical section, is to be determined by the following formula:

$$\cancel{t = \frac{p\;Dc}{2\;\sigma\;J - p}\;\frac{1}{\cos\alpha} + 0{,}75\ \text{mm}}$$

$$t = \frac{p\,D_c}{2\,\sigma\,J - p}\,\frac{1}{\cos\alpha} + c$$

where

α, α_1, α_2 = angle of slope of conical section (at the point under consideration) to the vessel axis, *see* *Figure 10.5.1 Conical ends and conical reducing sections* in *Pt 5, Ch 10 Steam Raising Plant and Associated Pressure Vessels*.

c is as defined in *Pt 5, Ch 11, 1.2 Definition of symbols*.

Section 7

Standpipes and branches

7.1 Minimum thickness

(Part only shown)

7.1.1 The minimum wall thickness, *t*, of standpipes and branches is to be not less than the greater of the two values determined by the following formulae, making such additions as may be necessary on account of bending, static loads and vibrations:

$$\cancel{t = \frac{p\,Do}{2\,\sigma\ J + p} + 0{,}75\ \text{mm}}$$

$$t = \frac{p\,D_o}{2\sigma J\ +\ p} + c$$

= where *t*, *p*, D_o, *c* and σ are defined in *Pt 5, Ch 11, 1.2 Definition of symbols*.

Section 10

Hydraulic tests

10.1 General

(Part only shown)

10.1.1 Pressure vessels covered by this Chapter are to be tested on completion to a pressure, p_T, determined by the following formula, without showing signs of weakness or defect:

$$\cancel{P_T = 0{,}13\,\frac{\sigma 50\,t}{\sigma T(t - 0{,}75)}\,p}$$

$$P_T = 1{,}3\,\frac{\sigma_{50}\,t}{\sigma_T(t - c)}\,p$$

but in no case is to exceed

$$\cancel{0{,}15\,\frac{t}{(t - 0{,}75)}\,p}$$

$$1{,}5\,\frac{t}{(t - c)}\,p$$

where

σ_{50} = allowable stress at 50°C, in N/mm^2~~.~~

c = corrosion allowance as defined in *Pt 5, Ch 11, 1.2 Definition of symbols*.

Part 5, Chapter 12

Piping Design Requirements

Section 8

Hydraulic tests on pipes and fittings

8.1 Hydraulic tests before installation on board

8.1.1 All Class I and II pipes and their associated fittings are to be tested by hydraulic pressure to the Surveyor's satisfaction. Further, all steam, feed, compressed air and fuel oil pipes, together with their fittings, are to be similarly tested where the design pressure is greater than 0,7 MPa. The test is to be carried out after completion of manufacture and before installation on board and, where applicable, before insulating and coating. An exception is made for carbon steel steam heating coils for cargo and slop tanks that are subjected to hot dip coating using zinc or aluminum which may be subjected to hydraulic testing after the application of the coatings.

Part 5, Chapter 19
Steering Systems

■ *Section 4*
Steering control systems

4.1 General

4.1.7 In the event of detecting a control system failure, which is likely to cause uncontrolled rudder movements, *see Table 19.5.1 Alarms*, the rudder is to retain its position at the time of failure without manual intervention. Alternatively, consideration will be given to the rudder moving to and retaining a position which is necessary for safe navigation of the vessel or to return to the mid-ship position where technical justification is submitted and is found to be satisfactory.

Part 6, Chapter 2
Electrical Engineering

■ *Section 1*
General requirement

1.6 Definitions

1.6.15 For emergency services and their emergency power supplies required to be capable of being operated under fire conditions, ‘high fire risk areas’ are:
(a) machinery spaces, except auxiliary machinery spaces having little or no fire risk, as defined by SOLAS 1974 as amended, *Chapter II-2 - Construction - Fire protection, fire detection and fire extinction*;
(b) spaces containing fuel treatment equipment;
(c) galleys and pantries containing cooking appliances;
(d) laundries containing drying equipment;
(e) ~~hazardous zones and spaces~~ spaces containing flammable substances; and
(f) for passenger ships carrying more than 36 passengers:
    (i) public spaces containing furniture and furnishings of other than restricted fire risk and having a deck area of 50 m^2 or more;
    (ii) barber shops and beauty parlours; and
    (iii) saunas.

Requests to exempt spaces identified in *Pt 6, Ch 2, 1.6 Definitions 1.6.15.(f)* may be considered when evidence is submitted that demonstrates emergency services will remain available in the event of a fire in the space (e.g. studies of fire protection measures, installation locations, system redundancy, etc.).

Part 7, Chapter 8
Positional Mooring and Thruster-Assisted Positional Mooring Systems

■ *Section 1*
General

1.2 Classification notations

1.2.3 Ships provided with a nearshore positional mooring system which complies with the requirements of *Pt 3, Ch 10, 16 Long-term nearshore positional mooring* of the *Rules and Regulations for the Classification of Offshore Units, July 2020* will be eligible for the assignment of special features class notation **LTMOOR** (Long-term Terminal Mooring). This notation applies to a nearshore ‘dry mooring system’ to jetty or quay but not a ‘wet mooring system’ anchored to the sea bed. Strength and fatigue assessments are to be carried out in accordance with the *ShipRight procedure for Long-Term Nearshore Positional Mooring Systems*.

Part 7, Chapter 11
Arrangements and Equipment for Environmental Protection (ECO Class Notation)

■ *Section 1*
General Requirements

1.2 ECO class notation: minimum requirements and additional characters

1.2.2 *Pt 7, Ch 11, 3 Supplementary characters* contains additional requirements. Ships complying with these requirements will be eligible for one or more of the following associated supplementary characters, as applicable:

A Anti-fouling coatings.
BIO Bio-fouling.
~~**BWT** Ballast water treatment.~~
CRM Cargo residue minimisation.
EAL Environmentally Acceptable Lubricants
~~**EEDI-1, EEDI-2,**~~ **EEDI-3** Energy efficiency design index.
~~**SEEMP**~~**, EnMS** Ship energy efficiency management.
GW Grey water.
IBTS Integrated Bilge Water Treatment System.
~~**NO$_{x2}$,**~~ **NO$_{x3}$ Nitrogen Oxides (NO$_x$) exhaust emissions.**
OW Oily bilge water.
P Protected oil tanks.
R Refrigeration systems.
~~**SOx, DIST Sulphur Oxides (SO$_x$) exhaust emissions.**~~
SOx-EGCS Exhaust Gas Cleaning System
TC Enhanced tank cleaning.
VECS-L, VOC-R Vapour emission control systems (tankers only).

■ *Section 2*
Minimum Requirements

2.3 Sulphur Oxides (SO$_x$)

2.3.2 The maximum sulphur content of fuel oil to be used on board is not to exceed ~~0,1~~ 0,5 per cent m/m, unless the ship is equipped with an EGCS meeting the requirements of *Pt 7, Ch 11, 2.3 Sulphur oxides 2.3.6*.

2.3.6 If an Exhaust Gas Cleaning System is fitted, it is to be certified to *Resolution MEPC.259(68) - 2015 Guidelines for Exhaust Gas Cleaning Systems - (Adopted on 15 May 2015)* and envisaged subsequent amendments. The system is to be able to operate at all times regardless of the area in which the vessel operates.

2.3.7 ~~Where petroleum-based distillate or residual fuels, with a sulphur content exceeding 0,1 0,5 per cent m/m, are used with an approved Exhaust Gas Cleaning System, the SO$_2$(ppm)/CO$_2$(%v/v) emission ratio method is to be used for determination of the corresponding emission ratio value, as specified in the *Table 11.2.1 Fuel oil sulphur limit and corresponding emission ratio value*.~~

~~**Table 11.2.1 Fuel oil sulphur limit and corresponding emission ratio value**~~

~~Fuel oil Sulphur Content (% m/m)~~	~~Emission ratio SO$_2$ (ppm)/CO$_2$ (%v/v)~~
~~0,10 0,50~~	~~4,3 21.7~~

■ *Section 3*
Supplementary characters

3.13 Sulphur oxides – Exhaust Gas Cleaning System SOx-EGCS character

3.13.1 Where Exhaust Gas Cleaning Systems (EGCS) discharge liquid effluents overboard, the Guidelines on EGCS in section *10 Washwater* of *Resolution MEPC.259(68) - 2015 Guidelines for Exhaust Gas Cleaning Systems - (Adopted on 15 May 2015)* and envisaged subsequent amendments are to be followed.

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